

Claims

- [c1] 1. An optical scanner suitable for scanning a vertical object, comprising:
- a scanning body, having a transparent window on a top surface thereof;
 - a focusing device, including:
 - an arm, with one end coupled to the scanning body;
 - a reflective mirror, disposed on the arm; and
 - a lens, disposed on the arm and located at a reflecting path of the reflective mirror; and
 - a scanning module, disposed within the scanning body and operative to reciprocally move underneath the transparent window, the scanning module comprising:
 - a shell, having a light cone opening for receiving an imaging light of the vertical object;
 - a lens, disposed within the shell; and
 - an optical sensor, disposed within the shell and located on an optical length following the lens of the scanning module.
- [c2] 2. The optical scanner according to Claim 1, further comprising a fine tuning device disposed on the arm to reduce a height of the arm and adjust a focal length of

the lens of the focusing device.

[c3] 3. The optical scanner according to Claim 1, wherein the vertical object includes a blackboard.

[c4] 4. The optical scanner according to Claim 1, wherein the vertical object includes a whiteboard.

[c5] 5. The optical scanner according to Claim 1, further comprising a projecting lamp source disposed at an internal bottom of the scanning body.

[c6] 6. The optical scanner according to Claim 1, further comprising a reflective mirror set installed in the shell and located along an optical path prior to the lens of the scanning module.

[c7] 7. An optical scanner suitable for scanning a vertical object and a horizontal object, the optical scanner comprising:

a scanning body, having a transparent window formed on a top surface thereof;

a lid, pivotally connected to the scanning body to cover the transparent window;

a focusing device, including:

an arm, with one end coupled to the scanning body;

a reflective mirror, disposed on the arm; and

a lens, disposed on the arm and located at a reflecting

path of the reflective mirror; and
a scanning module, disposed within the scanning body and operative to reciprocally move underneath the transparent window, the scanning module comprising:
a shell, having a light cone opening for receiving imaging light of the vertical object and the horizontal object;
a first lens, disposed within the shell; and
an optical sensor, disposed within the shell and located on an optical length following the first lens.

[c8] 8. The optical scanner according to Claim 7, wherein the first lens comprises a lens with dual focal points.

[c9] 9. The optical scanner according to Claim 7, further comprising a second lens with a focal length different from that of the first lens, the first and second lenses are switchable with each other.

[c10] 10. The optical scanner according to Claim 7, further comprising a fine tuning device disposed on the arm to reduce the height of the arm and to adjust a focal length of the lens of the focusing device.

[c11] 11. The optical scanner according to Claim 7, wherein the vertical object includes a blackboard.

[c12] 12. The optical scanner according to Claim 7, wherein the vertical object includes a whiteboard.

[c13] 13. The optical scanner according to Claim 7, further comprising a projecting lamp source disposed at an internal bottom of the scanning body.

[c14] 14. The optical scanner according to Claim 7, further comprising a reflective mirror set installed in the shell and located along an optical path prior to the lens of the scanning module.